

The present listing of claims replaces all prior versions.

1. (Currently Amended) A method of treating sleep disordered breathing comprising the steps of
determining the likelihood of a patient being asleep,
delivering treatment so as to prevent airway collapse if said patient is asleep,
determining the presence of an obstruction in said patient's airway, and
if an obstruction is present increasing said treatment until said obstruction is no
longer present,
wherein said treatment comprises and of applying electrical stimulation of
afferent nerves to increase muscle tone of upper airway muscles, wherein the
application of electrical stimulation is based upon the likelihood of the patient
being asleep,
said presence of an obstruction is determined by sensing a change in
transthoracic impedance, and
said patient's sleep state is determined based upon the time of day and the
patient's postural state.

2. (cancelled)

3. (Currently Amended) The method of claim 2 whereby 1 wherein the site of electrical stimulation is within or adjacent to the genioglossus muscle.

4. (Currently Amended) The method of claim 2 ~~whereby~~ 1 wherein the site of electrical stimulation is in the vicinity of the hypoglossal motor nucleus or excitatory afferent nerve pathways leading to this structure.

5. (Currently Amended) The method of claim 1 ~~whereby~~ wherein the electrical stimulation comprises trains of electrical pulses.

6. (Currently Amended) The method of claim 5 ~~whereby~~ wherein the train length is approximately 10-30 pulses.

7. (Currently Amended) A method of treating sleep disordered breathing comprising the steps of
determining the likelihood of a patient being asleep,
delivering treatment so as to prevent airway collapse if said patient is asleep,
determining the presence of an obstruction in said patient's airway, and
if an obstruction is present increasing said treatment until said obstruction is no
longer present,
wherein said treatment comprises ~~and of~~ applying mechanical stimulation of
afferent ~~nerves to increase muscle tone of upper airway muscles, wherein the~~
~~application of mechanical stimulation is based upon the likelihood of the~~
~~patient being asleep,~~
said presence of an obstruction is determined by sensing a change in
transthoracic impedance, and

said patient's sleep state is determined based upon the time of day and the patient's postural state.

8. (Currently Amended) The method of claim 7 ~~whereby~~ wherein mechanical stimulation is performed by a piezo electric mechanical element implanted at a site in the vicinity of the upper airway.

9. (Currently Amended) The method of claim 8 ~~whereby~~ wherein the piezo-electric mechanical element is implanted within or adjacent to the base of the genioglossus muscle.

10. (Currently Amended) The method of claim 7 ~~whereby~~ wherein the mechanical stimulation is periodic.

11. (Currently Amended) The method of claim 10 ~~whereby~~ wherein the period is ~~in~~ on the order of several seconds of vibration.

12. (Currently Amended) The method of claim 7 ~~whereby~~ wherein the mechanical vibration occurs at frequencies in the range of 10-50 Hz.

13. (Currently Amended) The method of claim 1 ~~whereby~~ wherein stimulation is repeated in accordance with the detected state of the airway.

14. (Currently Amended) The method of claim 1 whereby wherein stimulation is carried out in accordance with a model of Cheyne-Stokes Respiration.

15. (Currently Amended) Apparatus for treating respiratory disorders in a patient ~~comprising a piezo-electric mechanical element~~ adapted for implant within or adjacent to the base of genioglossus muscle, comprising a piezo-electric mechanical element;
a detector to detect transthoracic impedance changes;
a controller adapted to elicit vibration of the element via an electrical signal to
prevent airway collapse during sleep, to determine the presence of an
obstruction, and to adjust said vibration upon the presence of an obstruction;
a real time clock for determining time of day; and
a position sensor for sensing postural state;
wherein said element is vibrated only for combinations of time of day and
postural state that indicate that said patient is likely to be sleeping.

16-31. (cancelled)

32. (Currently Amended) The method of claim 7 whereby wherein stimulation is repeated in accordance with the detected state of the airway.

33. (Currently Amended) The method of claim 7 ~~whereby~~ wherein stimulation is carried out in accordance with a model of Cheyne-Stokes Respiration.

34. (New) A method of treating sleep disordered breathing comprising the steps of
determining the likelihood of a patient being asleep,
delivering treatment so as to prevent airway collapse if said patient is asleep,
determining the presence of an obstruction in said patient's airway, and
if an obstruction is present increasing said treatment until said obstruction is no longer present,
wherein said treatment comprises applying electrical stimulation of afferent nerves, and
said presence of an obstruction is determined by sensing a change in transthoracic impedance.